# How to Run ArcIMS 9.1 in True 64-Bit Mode on Xeon Processors

### Do it by configuring Tomcat to work with IIS 6.0 in Windows 2003 X-64 on 64-Bit hardware.


**Software:** ArcIMS 9.1
**Platform:** Windows Server 2003 R2 Standard x64 Edition
**Architecture:** Dual-core Xeon processor(s)
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## Introduction

The version of Windows 2003 Server operating system you use and the architecture on which you run determine what supporting software you need to implement to use ArcIMS. Our goal was to run ArcIMS without running any IIS applications in 32-bit mode. This article is written specifically for the new, 64-bit, **dual-core Xeon** processors running Windows Server 2003 R2 Standard x64 Edition in true 64-bit mode.

If you are running an **Itanium** or **AMD Opteron** processor the body of this document will not help you. Please see the section near the end of this article, entitled "Other 64- bit Processors."

Many, if not most, ArcIMS users will begin their experience with what ESRI calls the "HTML Viewer." This is a series of HTML and Javascript files that interact with the ArcIMS application server using the (Java) servlet connector. The ArcIMS servlet connector is managed by a servlet container (formerly referred to as a servlet engine). The servlet container hosts and interacts with Java servlets. ESRI supports ServletExec, Tomcat and JRun servlet containers, but not on all platforms and configurations.

In an article dated 6/5/2006, entitled ***FAQ: Does ESRI support 64-bit processors with ArcGIS products?*** (http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=29391), ESRI states that "ArcIMS is supported as a 32-bit application on 64-bit (x64) Microsoft Windows." The only supported servlet container is ServletExec 5.0 ISAPI. On a 64-bit Windows server, SE5 will run in whichever mode, 32-bit or 64-bit mode, IIS is running. See http://www.newatlanta.com/c/products/servletexec/self_help/faq/detail?faqId=296 for an explanation.

So, ESRI supports running ArcIMS/ServletExec on 64-bit Windows (Itanium) and ArcIMS/Tomcat on 32-bit Windows but, as of the date this article was written (September, 2006), does not support ArcIMS/Tomcat on 64-bit windows. If you are willing to operate in what is an unsupported mode, read on. Otherwise, see the section entitled "Running ServletExec in 32-bit Mode."

ESRI provides a recipe for installing ArcIMS 9.1 running on IIS/Tomcat named
***Install IIS 6 with Tomcat 5.0.28 using J2SDK 1.4.2_06 for ArcIMS 9.1 on Windows 2003***
(http://support.esri.com/index.cfm?fa=knowledgebase.techarticles.articleShow&d=29051).
This web-page will be referred to in this document as "ESRI's article 29051."

The recipe, as documented in ESRI's article 29051, will NOT work for servers running **Windows 2003 Release 2** on **dual-core Xeon** processors. However, if you make the changes outlined in the "Changing the Ingredients" section of this paper, you will be able to run ArcIMS in true 64-bit mode on the fastest Windows architecture available.

This implementation was tested on a Dell server running two 64-bit, dual-core, Xeon processors.

## Identifying the Problem

ArcIMS, the Tomcat servlet container, and the Java Virtual Machine (part of the JRE or JDK) all run properly on the Win2003R2/Xeon architecture. The software called the 'redirector' does not work.

It is supposed to transfer execution of the ArcIMS servlet connector calls (URL's containing the string "servlet/") from IIS to the Tomcat servlet container but does not. The reason is that the redirector must be compiled to match the operating system and processor architecture of the server on which it will run.

ESRI provides a 32-bit redirector, along with other files essential to the configuration of Tomcat, in a zip-file at http://downloads.esri.com/support/TechArticles/IMS/tomcat_5028_Windows/Tomcat5028_IIS_IMS91_win.zip. However, we needed a 64-bit redirector. Zach and I found only one 64-bit Jakarta redirector at apache.org (or anywhere else for that matter). The link is http://archive.apache.org/dist/jakarta/tomcat-connectors/jk/binaries/win64/jk-1.2.14/. The file is named "**isapi_redirect-1.2.14-x64.dll**," which implies that it is for the x64 architecture. However, this redirector does not work on Windows 2003 x64 (running on a dual-core Xeon processor). Zach addressed this problem by downloading the source-code for the Jakarta redirector and the proper software development kit from Microsoft for the Xeon architecture and compiling the redirector. You can find the steps necessary to compile a Jakarta redirector to match your architecture entitled ***Compiling the Jakarta Redirector for the Intel Dual Core 64-bit Processor*** at http://www.idwr.idaho.gov/gisdata/tech_note/compilingx64redirector.pdf

## Changing the Ingredients

Download J2SDK 1.4.2_10 from http://java.sun.com/products/archive/j2se/1.4.2_10/index.html. Make the following changes to instructions in **ESRI's article 29051**or the contents of their **Tomcat5028_IIS_IMS91_win.zip** file, which is mentioned in step 5a of the instructions:

**Changes made to the instructions:**

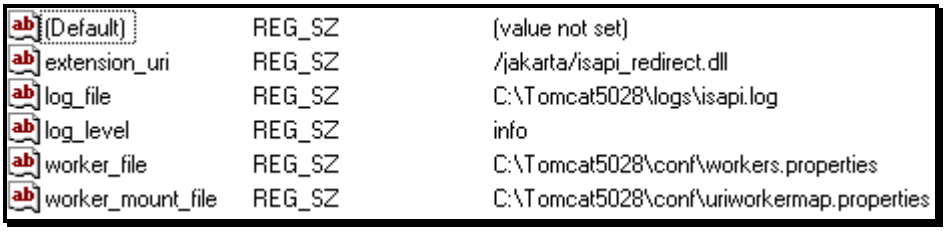
1. Change all Java SDK references from "J2SDK 1.4.2_06" to "J2SDK 1.4.2_10"
2. Change all references "<drive>:\Tomcat5028\bin\win32" to "<drive>:\Tomcat5028\bin\win64."

**Changes made to contents of the zip-file:**

1. Use the version of the Jakarta redirector that we compiled on the dual-core Xeon architecture (instead of the one ESRI provides in the zip-file); it is available at http://www.idwr.idaho.gov/gisdata/tech_note/compilingx64redirector.pdf .
   Copy it to the <drive>:\Tomcat5028\bin\win64 directory. It is 203 KB (208,384 bytes).
2. Rename "workers.propreties.minimal" to "workers.propreties" in the C:\Tomcat5028\conf directory.

3. Modify two of the registry entries created by the ESRI's reg-file:
   Change log_level to 'info' in order to log more than just the errors.
   Change the worker_file to "workers.propreties".

The modified registry entries in [HKEY_LOCAL_MACHINE\SOFTWARE\Apache Software Foundation\Jakarta Isapi Redirector\1.0] will look like this:




## Supporting Information

ArcIMS, running on IIS, is shown only for PC-Intel (32-bit) and Itanium II (64-bit) architectures in the matrix found at
http://support.esri.com/index.cfm?fa=knowledgebase.systemRequirements.matrix&pName=ArcIMS&productID=16&pvName=9.1&versionID=100&PID=16&PVID=282

ESRI says the Tomcat 5.0.28 servlet container can be used on Windows 2003 (32-bit) so we chose that version for our tests.
***ArcIMS 9.1 with PC-Intel Windows Server 2003 Standard, Enterprise and Small Business on Internet Information Server 6.0***
(http://support.esri.com/index.cfm?fa=knowledgebase.systemRequirements.formList&PN=ArcIMS&PID=16&SN=Internet+Information+Server&count=1&pvid=282&hn=PCItel+Windows+Server+2003+Standard%2C+Enterprise+and+Small+Business&VID=562 )
The document states "JDK versions 1.3.1_02, 1.4.0, 1.4.1_05, 1.4.2_06, and 1.4.2_08 are supported." It does not mention version 1.4.2_10, which we selected based on information cited below.

The only published system requirements for running ArcIMS 9.1 on a Windows 2003 Server – on a 64-bit architecture – is for ServletExec 5.0 ISAPI running on the Itanium II processor.
***ArcIMS 9.1 with Itanium II Windows Server 2003 64bit Standard, Enterprise & Datacenter on Internet Information Server 6.0***
(http://support.esri.com/index.cfm?fa=knowledgebase.systemRequirements.list&PN=ArcIMS&PID=16&PVID=282&VID=1070&COUNT=1 )
Refer to the section entitled ***ArcIMS Server:*** under ***J2SE JRE REQUIREMENTS*** – "For 64-bit Itanium-based systems, use the Windows IA64 Platform - Java(TM) 2 SDK, Standard Edition 1.4.2_10. Currently, there is no 64-bit JRE available." I used that reference as a basis for choosing JDK 1.4.2_10 over the versions recommended for the ESRI-supported, 32-bit installation of Tomcat/ArcIMS.

## Troubleshooting

Check your "Application Log" in the "Event Viewer" each time you install a component or test with a web-page. You should not get a single error.

Run the Tomcat "HelloWorld" example and see if it works on TCP/IP port 8080. If it works on port 8080 but not on port 80 the Jakarta redirector is not working. As noted in several sections of this document, the redirector is specific to the architecture. You must have the correct one for these instructions to work.

## Other 64- bit Processors

Windows 2003 runs on various 64-bit processors including the AMD64 and the EM64T, IA64 and X64 processors from Intel. The Jakarta redirector for IA64 and X64 (thanks to Zach) work. Re-compiling the redirector for other operating system/processors should work.

## Running ServletExec in 32-bit Mode

New Atlanta (ServletExec) states that "SE 5.0 ISAPI supports 64-bit IIS running on Intel's Itanium architecture (http://www.newatlanta.com/c/products/servletexec/self_help/faq/detail?faqId=302) with the additional caveat, "So long as your JVM is also 64-bit, then SE should work fine." Since we are using a 32-bit JVM, I configured IIS to run in 32-bit mode and tested the installation. It works. I have written an article about running ServletExec on Windows Server 2003 R2 Standard x64 Edition on a dual-core Xeon processor in 32-bit mode. Please refer to *Running ServletExec 5.0 in 32-bit Mode on an Intel 64-Bit, Dual Core Processor at*

http://www.idwr.idaho.gov/gisdata/tech_note/runningServletExec5in32-bitMode.htm